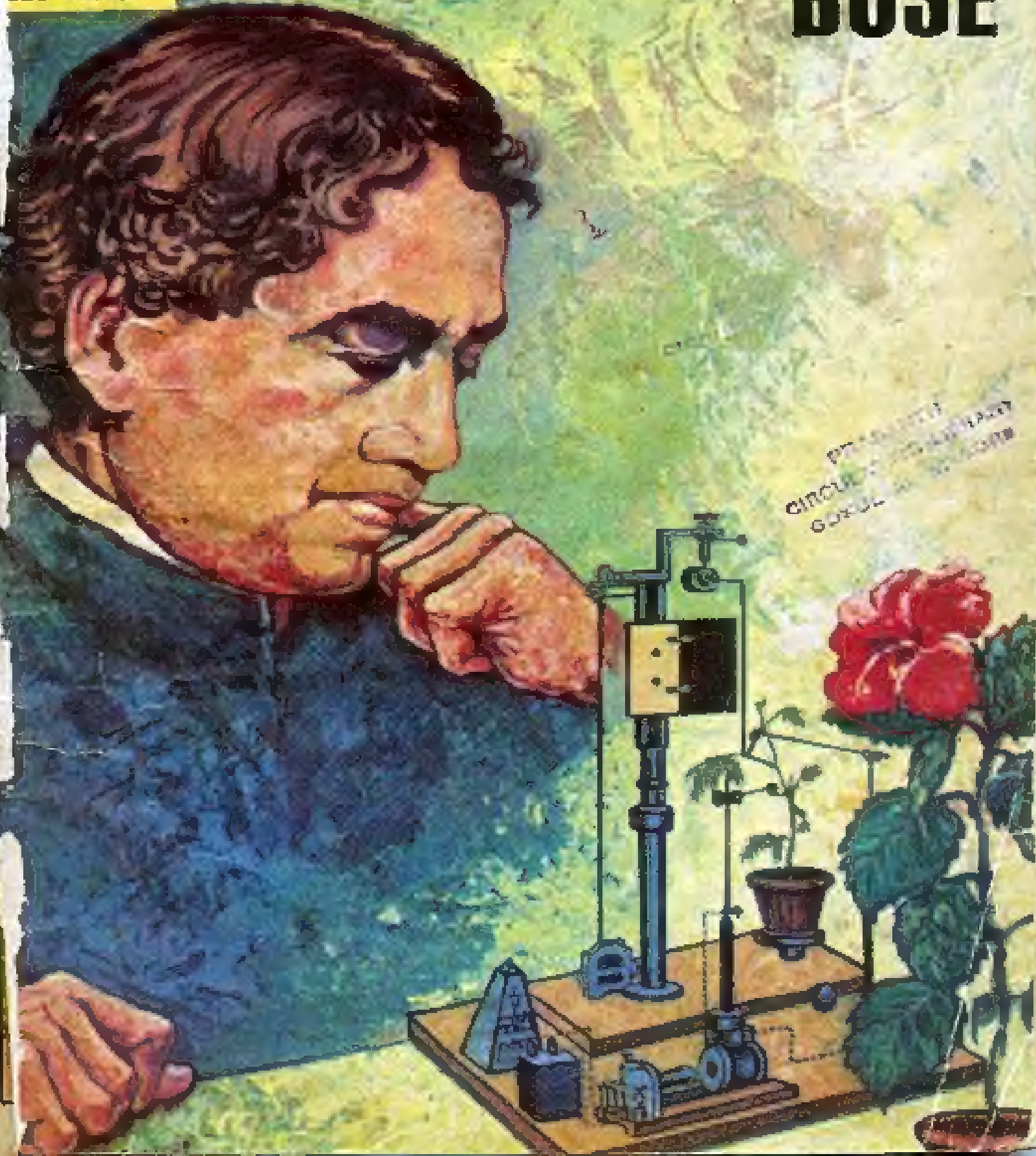




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JAGADIS CHANDRA BOSE



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Jagadis Chandra Bose

Jagadis Chandra Bose (1858-1937) was the first Indian scientist in modern times to have won international recognition. Gifted with a mind that was at once inquisitive and discerning, Bose wondered about the how and why of things from a very young age.

All along, he kept himself abreast of scientific and technological developments in the west. With Marconi—who at about the same time worked independently halfway across the globe—he laid the foundations of radio broadcasting.

Though he began with experimental physics, his innate interest in living beings veered him towards the science of biophysics. He invented extremely sensitive instruments that could detect and measure the responses of living organisms to external stimuli.

However a verdict on the validity of much of his pioneering work in Biophysics will have to wait. For, as the 1945 edition of 'Encyclopaedia Britannica' wrote: "His work was so much in advance of his time that its precise evaluation was not possible."

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JAGADIS CHANDRA BOSE



1862, PASADENA: A BOY OF FOUR LOOKED UP AT THE SKY...

...AND TURNED TO HIS FATHER.

BABA, I SAW SO MANY STARS IN THE SKY LAST NIGHT. BUT NOW THEY ARE GONE.



WHERE HAVE THEY GONE, BABA?



THEY HAVEN'T GONE ANYWHERE, SON. WE CANNOT SEE THEM BECAUSE THE SUN'S LIGHT IS BRIGHTER.



BABA, WHY ARE PLANTS ALL GREEN? BIRDS AND ANIMALS HAVE SO MANY COLOURS.

TO TELL YOU THE TRUTH, I DON'T KNOW.



WHEN YOU GROW OLDER TRY TO FIND OUT WHY.

THE BOY WHO ASKED QUESTIONS WAS JAGADIS CHANDRA BOSE WHO LATER BECAME THE FIRST INDIAN IN MODERN TIMES TO WIN INTERNATIONAL ACCLAIM AS A SCIENTIST.

JAGADIS'S MOTHER, BAMASUNDARI, WAS A TRADITIONAL HINDU WIFE AND A LOVING BUT STRICT MOTHER.



MA! MA!
WILL YOU
TELL ME
THE STORY
OF KARNA?

FIRST WASH
YOUR HANDS
AND FEET.

JAGADIS LIKED TO LISTEN TO THE STORY OF KARNA AGAIN AND AGAIN.



WHEN THE STORY-TELLING WAS OVER, BAMASUNDARI ASKED HIM THE USUAL QUESTION.

NOW TELL ME,
WHY IS KARNA
SO GREAT?

BECAUSE HE
KEPT FIGHTING
TO THE LAST.



MA, HOW MUCH
DO YOU LOVE
ME?

SO-O-O
MUCH!



JAGADIS WAS THE PET OF THE BOSE HOUSEHOLD AND HE KNEW IT.

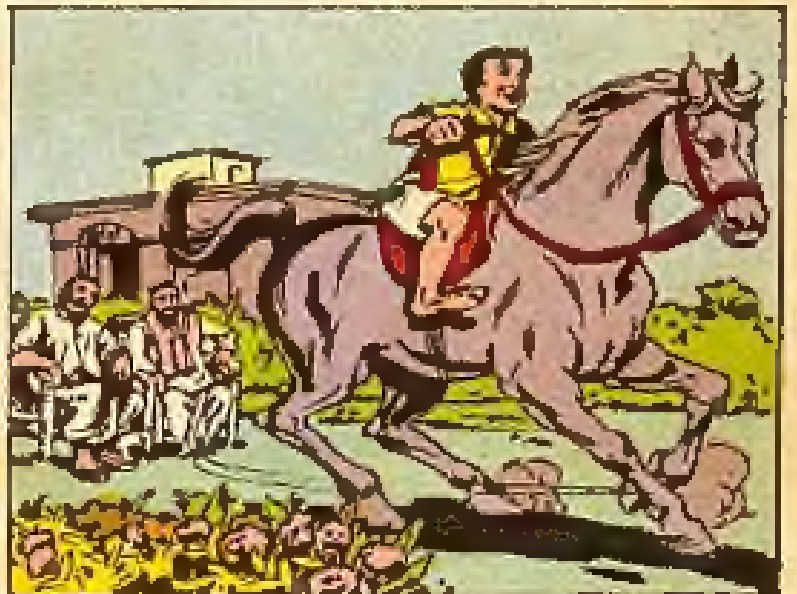
JAGADIS' FATHER, BHAGWAN CHANDRA BOSE, WAS THE DEPUTY MAGISTRATE OF FARIDPUR. HE WAS A GREAT LOVER OF SPORT.

NOW ISN'T THAT
A TOUGH JOB FOR
A FIVE-YEAR-
OLD? WHY DO
YOU LET HIM
DO IT?

A LITTLE STRENUOUS
EXERCISE IS GOOD FOR
A GROWING BOY'S LIMBS.



LOOK! HE'S
MOUNTING THE
PONY! HE'LL FALL
OFF!



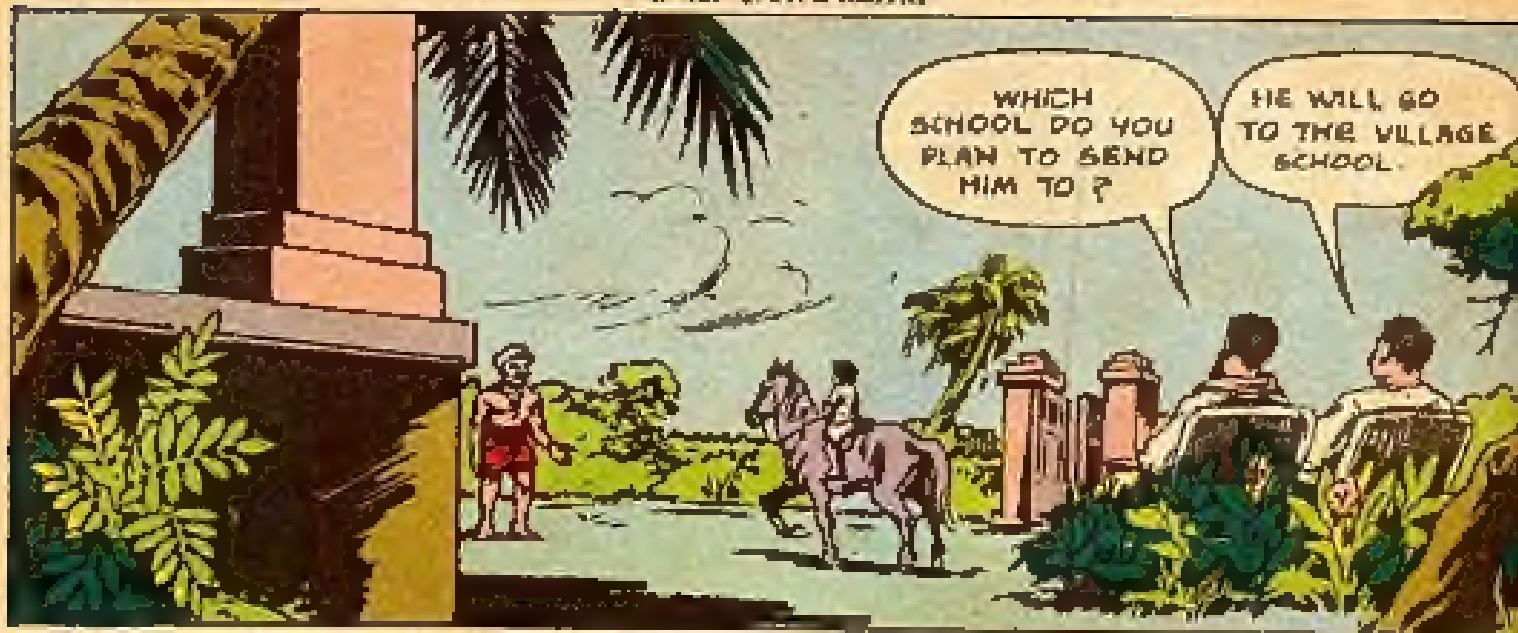
YOUR SON, IS
SMART... JUST LIKE
AN ENGLISH BOY!



BHAGWAN CHANDRA GENTLY CORRECTED
HIS FRIEND.

HE IS SMART LIKE
ANY OTHER
INDIAN BOY.





WHICH SCHOOL DO YOU PLAN TO SEND HIM TO ?

HE WILL GO TO THE VILLAGE SCHOOL.



THE SCHOOL YOU FOUNDED ? BUT... BUT THAT'S FOR... YOU CAN'T BE SERIOUS!

I AM!



IT WAS THOUGHTFUL OF YOU TO START A BENGALI SCHOOL FOR THE LOCALS.



BUT, SURELY, THE SON OF OUR DEPUTY MAGISTRATE DESERVES TO GO TO AN ENGLISH SCHOOL.

I BEG YOUR PARDON. A SCHOOL WHICH TEACHES IN HIS MOTHER-TONGUE IS THE BEST ONE FOR HIM.



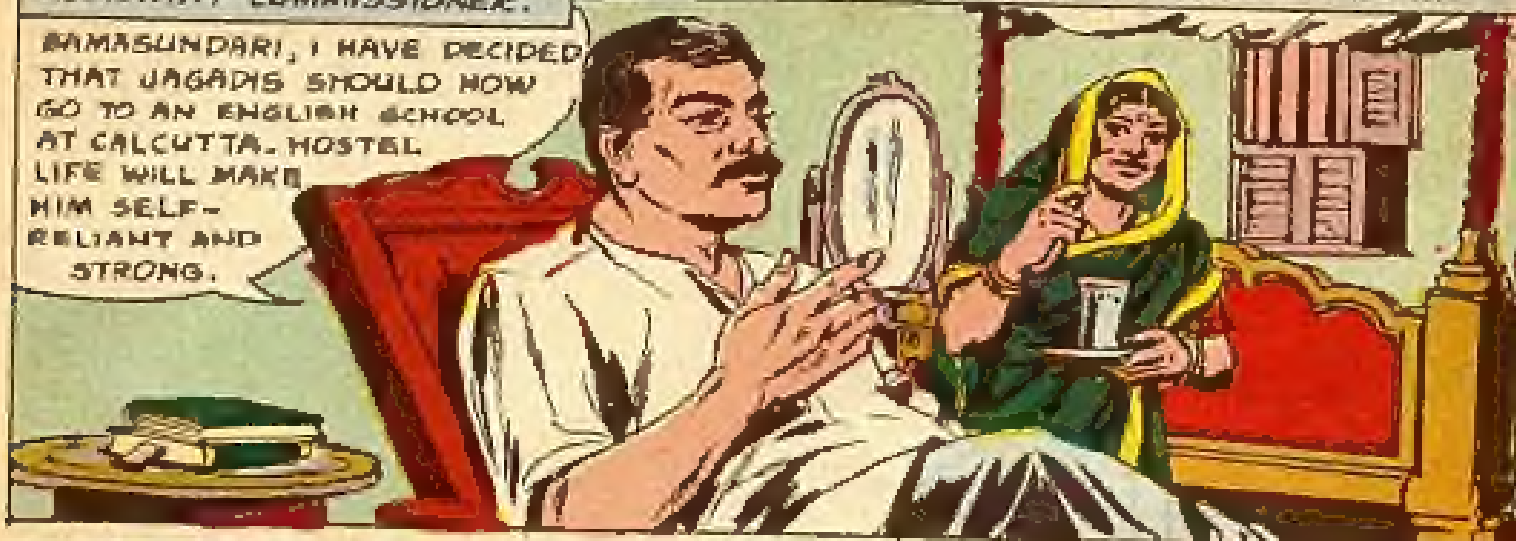
WHILE OTHER CHILDREN WERE CONTENT WITH SCHOOL WORK, JAGADIS, EVER CURIOUS ABOUT NATURE, WAS ALWAYS RUNNING OFF TO GAZE AT THE FIELDS, THE WOODS, THE RIVER.



THROUGHOUT HIS LIFE JAGADIS LOVED ANIMALS AND BIRDS. TILL HE WENT UP TO COLLEGE HIS PETS RANGED FROM SNAKES AND FROGS TO SHEEP!

WHEN JAGADIS WAS TEN, HIS FATHER WAS TRANSFERRED TO BURDWAN AS AN ASSISTANT COMMISSIONER.

BAMASUNDARI, I HAVE DECIDED THAT JAGADIS SHOULD NOW GO TO AN ENGLISH SCHOOL AT CALCUTTA. HOSTEL LIFE WILL MAKE HIM SELF-RELIANT AND STRONG.



THE CHANGE FROM THE COSY WARMTH OF HIS TRADITIONAL INDIAN HOME TO A HOSTEL OF BLUNT, ROISTEROUS STUDENTS MADE JAGADIS MISERABLE AND HOME SICK.



THE FIRST FEW DAYS AT SCHOOL WERE PARTICULARLY BAD FOR THE SENSITIVE BOY. HE DID NOT KNOW WESTERN MANNERS AND HE COULD BARELY SPEAK ENGLISH.







OVER THE NEXT FEW WEEKS HE MADE A GARDEN IN THE HOSTEL, COLLECTED A FEW PETS AND SOON BEGAN TO ENJOY SCHOOL AND HOSTEL LIFE.





AT LAST I TOOK UP TO A RETURNED HOME
 OF MAN I WAS ALLAYS
 (WHAT IS THAT FATHER?)
 (IT IS A WEEDS)



WHEN MY WIFE AND I AT
 ENJOY A MALAYIA SPERM
 BUILT UP HERE MANY
 MILDEN LEFT THE PARENTS



IN THE I WAS
 WENT TO THE
 AND I WENT
 AND I WENT
 AND I WENT
 AND I WENT



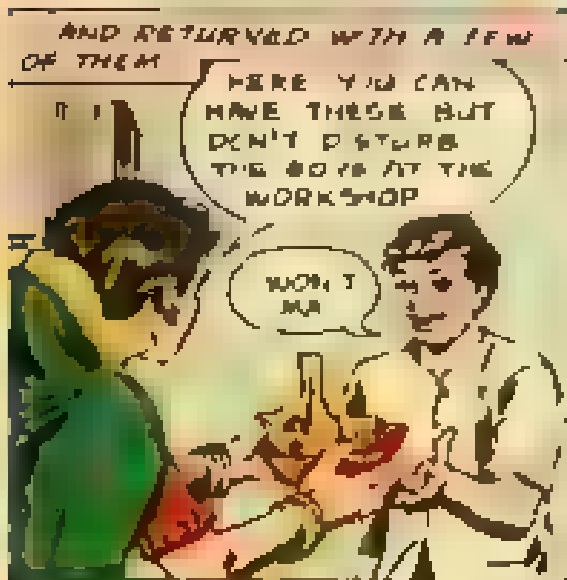
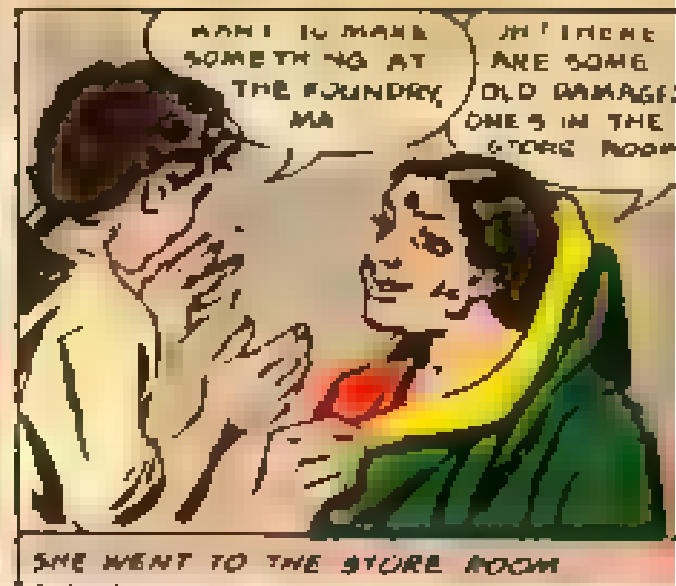
WHAT DO
 THEY TALK?
 ON CARPENTRY
 AND THEIR
 TRADES



JAGADIS STARTED SPENDING MOST OF HIS
 HE IN HIS BUSINESS
 (PLEASE SHOW ME HOW
 WILL HOLD IN
 THE DATA)
 (YOU HAVE TO
 HOLD THE DRILL
 FIRST AND THEN
 THE HANDLE LIKE
 THIS)



BUT WHAT FASCINATED HIM MOST WAS
 THE PLUMBER
 (DO YOU MELT MY
 METAL IN THAT
 FURNACE?)
 (ANY METAL,
 JAGADIS BABU)

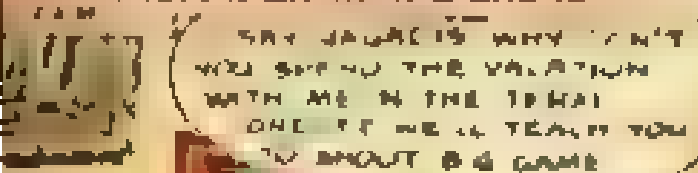


BOSE ENJOYED HIS STUDY AT ASTRON AND JOINED BY 17. AND COLLEGE THERE HE FELL UNDER THE SPELL OF FR. LAFONT THE DIRECTOR OF THE COLLEGE AND THE BEST PROFESSOR OF PHYSICS IN INDIA IN THOSE DAYS



FR. LAFONT ON HIS PART SAW GREAT PROMISE IN HIS STUDENT AND ENCOURAGED HIM IN THE STUDY OF PHYSICS

THREE DELIGHTFUL YEARS OF COLLEGE FLEW PAST. THEN AT THE END OF



JAGADIS ACCEPTED THE INVITATION AND CAME BACK AN EXPERT IN BIG GAME HUNTING AND WITH A

* ABOUT 34 KM

WHEN THE NEXT VACATION CAME ROUND, ANOTHER FRIEND INVITED HIM, TO ASSAM THIS TIME, FOR THE SAME SPORT.



ALIGHTING AT THE ASSAM RAILWAY STATION HE HAD TO TRAVEL OVERNIGHT BY PALANQUIN TO REACH HIS FRIEND'S HOUSE

OH! SAND-FLIES HERE TOO! WHAT A nuisance!



AS SOON AS HE REACHED, HE AND HIS FRIEND LEFT FOR THE FORESTS AND SPENT THE WHOLE DAY THERE



THAT EVENING

WHAT'S THE MATTER, ROSE? YOU LOOK PALE

I'M NOT FEELING TOO WELL. I MUST SEE A DOCTOR.



BUT THERE ISN'T ONE IN MILES

THEN I MUST GET BACK TO CALCUTTA BEFORE I GET WORSE. I MUST LEAVE NOW



BUT YOU CAN'T GET A PALANQUIN TILL TOMORROW

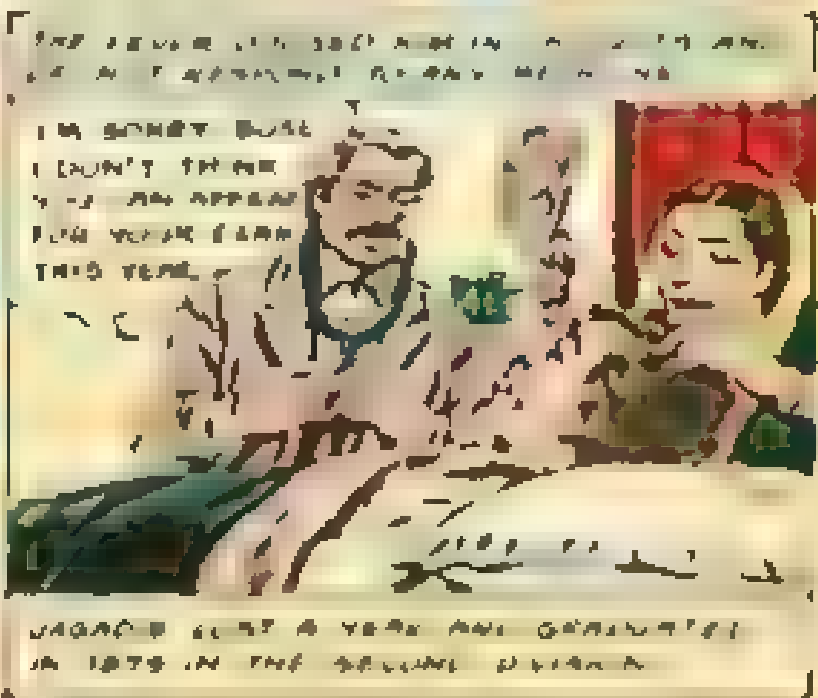
I'LL RIDE TO THE STATION



I'VE SENT AWAY THE HORSES WE USED THE ONLY ONE HERE IS A WILD, VICIOUS CREATURE!

THAT'S ALL RIGHT I'VE RIDDEN HORSES EVER SINCE I WAS FIVE. BRING HIM ON.





JAGADE LEFT A YEAR AND GRADUATED IN 1975 IN THE TECHNICAL DIVISION

HE RETURNED HOME WITH PLANS TO GO ABROAD FOR FURTHER STUDIES.

FATHER, I WOULD LIKE TO GO TO ENGLAND AND TRY FOR THE I.C.S.

TO BECOME AN ADMINSTRATOR?

TO BECOME A CIVIL SERVANT AND SERVE THE BRITISH GOVERNMENT?

NO SON, WOULD RATHER YOU STAYED SOMETHING LIKE ASS-CULTURAL & ENCE THEN YOU COULD TRULY SERVE OUR COUNTRYMEN

HE JOINED THE UNIVERSITY OF LONDON AND MADE A GOOD START. THEN ONE DAY IN THE ANATOMY ROOM -

HEY WHAT'S THE MATTER WITH BOSE?

VASUDEB FINALLY DECIDED TO STUDY MEDICINE AND LEFT FOR ENGLAND IN 1900

WHAT'S WRONG BOSE?

IT'S THE ODOUR HERE. I FEEL SICK

DID YOU BE BURNING WITH FEVER

LET'S TAKE HIM TO HIS ROOMS

IT WAS AN ATTACK OF THAT UNIDENTIFIED FEVER. AFTER A FEW DAYS REST HE FEEL BETTER.

THE FEVER RETURNED. AT LAST

HE WAS A SORRY
BUT I'M AFRAID YOU'LL
HAVE TO GIVE UP THE
STUDY OF MEDICINE.
YOU ARE ALLERGIC
TO THE ODORS
OF THE ANATOMY



SO BOGG GAVE UP MEDICINE AND TOOK UP THE NATURAL SCIENCE COURSE AT CAMBRIDGE. HIS PHYSICS INSTRUCTOR THERE WAS LOUIS LAFFONT A LEADING SCIENTIST OF THE TIMES

IT IS FASCINATING IS THE
WAY OF ENERGY AND
MATTER AND THEIR
INTERACTION AND PRO-
PORTION MAKES IT ALL
SOUND SO SIMPLE
AND CLEAR



HE HAS THE
SAME APPROACH
TO THE
SUBJECT AS
MR LAFFONT



AT CAMBRIDGE HIS FEVER VANISHED
AND NEVER AGAIN TROUBLED HIM

HE TOOK HIS DEGREE (TRIPLOS) IN THE
NATURAL SCIENCES IN 1884 WITH PHYSICS,
CHEMISTRY AND BOTANY...



AND SIMULTANEOUSLY TOOK A B SC
DEGREE FROM THE UNIVERSITY OF LONDON
AS IT DID NOT REQUIRE ANY EXTRA WORK

HE RETURNED TO INDIA AND FOUND THAT HIS FATHER HAD MADE SOME MISCALCULATIONS AND RUN UP HUGE DEBTS.

IN 1885, BOSE SECURED THE POST OF PROFESSOR OF PHYSICS AT PREMDENCY COLLEGE IN CALCUTTA



I MUST SEEK SOME EMPLOYMENT AND HELP FATHER OUT

BUT SOMETHING HE DISCOVERED ONLY LATER MADE HIM VERY UNHAPPY

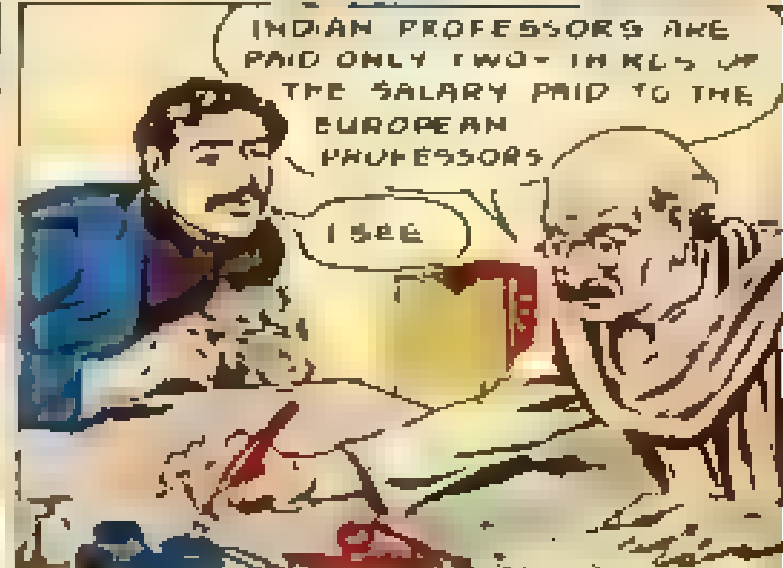
HAVEN'T YOU MADE A MISTAKE?

NO, BABU, I HAVEN'T



INDIAN PROFESSORS ARE PAID ONLY TWO-THIRDS OF THE SALARY PAID TO THE EUROPEAN PROFESSORS

I SEE

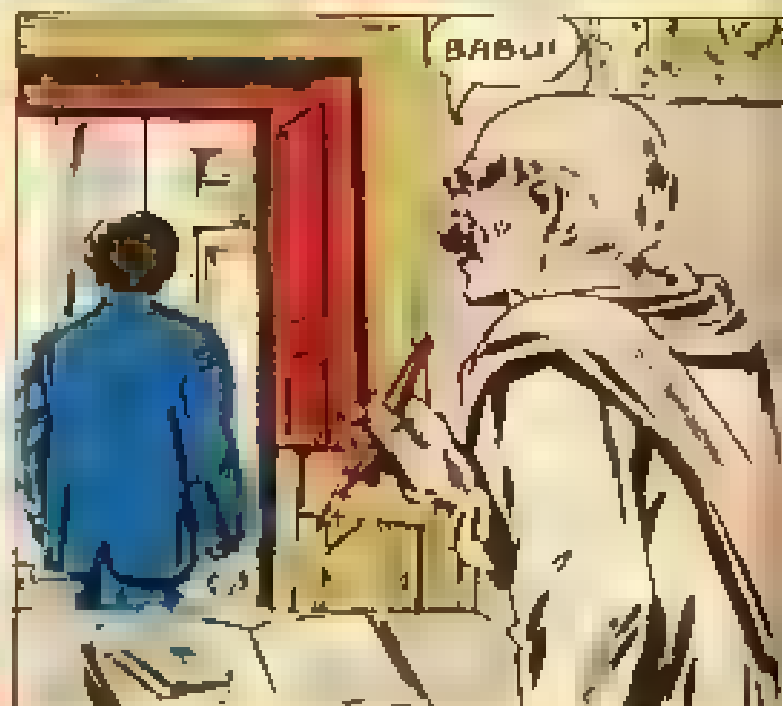


BABU, PLEASE SIGN HERE

IT WON'T BE NECESSARY I'M NOT ACCEPTING MY SALARY



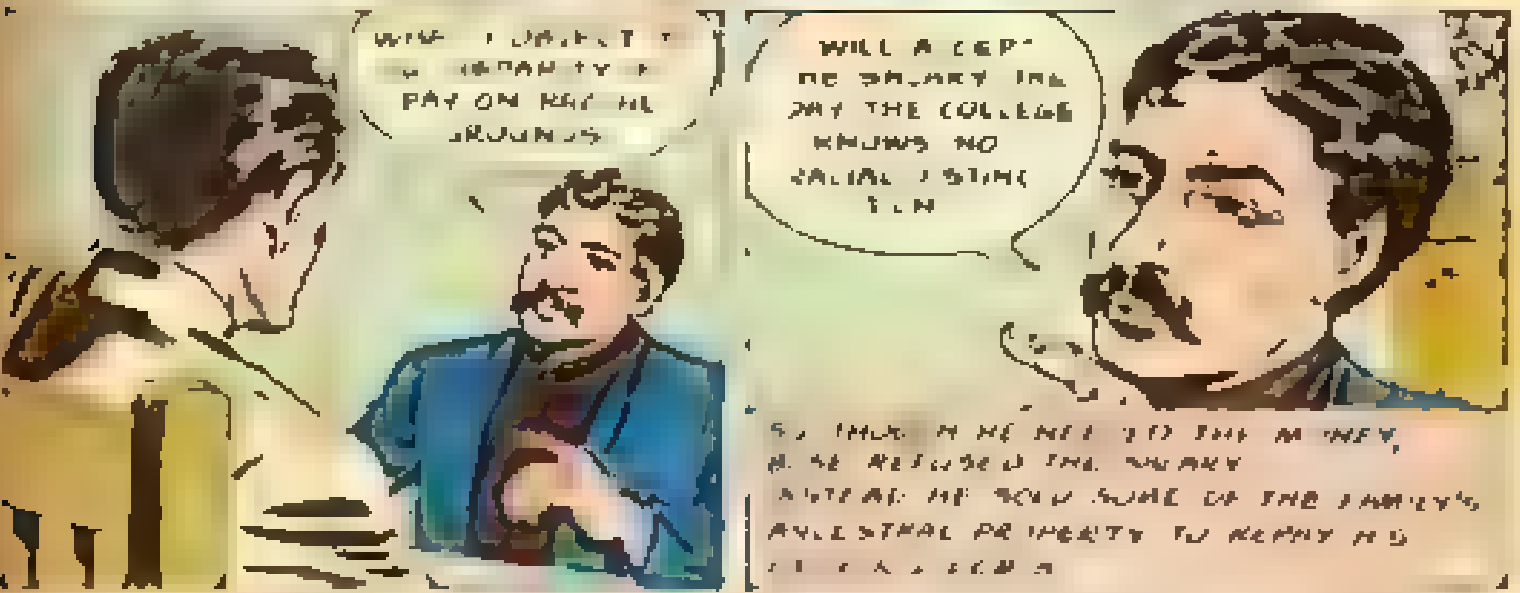
BABU!





IF I DON'T THEN I'LL GO AWAY TO THE FRONT AND I'LL BE THERE FOR THE REST OF MY LIFE

IT IS A MATTER OF HONOUR TO TEACH AT THIS COLLEGE SO I TEACH



WILL YOU PLEASE PAY ON MY BEHALF

WILL A CUP OF TEA BE SERVED THE COLLEGE KNOWS NO SOCIAL DISTINCTIONS

SO THAT HE NEED NOT THE MONEY, HE REFUSED THE MONEY INSTEAD HE SOLD SOME OF THE FAMILY'S ANCESTRAL PROPERTY TO REPLY HIS DEBT



THE MAN STATED HE HAD BEEN UP TO THE 10TH YEAR AND IS INTERESTED IN A GIRL WHO IS A GOOD ONE & WOULD MAKE AN EXCELLENT WIFE AND COMPANION FOR HIS

THIS PREDICTION PROVED TO BE VERY TRUE

MEANWHILE BOSE WAS GETTING TO BE POPULAR WITH THE STUDENTS

COME ON LET'S HURRY IT'S PROF BOSE'S CLASS WE WON'T BE ABLE TO GET IN THE FIRST ROW IF WE ARE LATE



THOUGH IT TOOK THREE YEARS BOSE'S PROTEST FINALLY MADE ITS IMPACT AND A COMMON PAY SCALE WAS INTRODUCED

BOSE! YOU HAVE WON! CONGRATULATIONS

THANK YOU



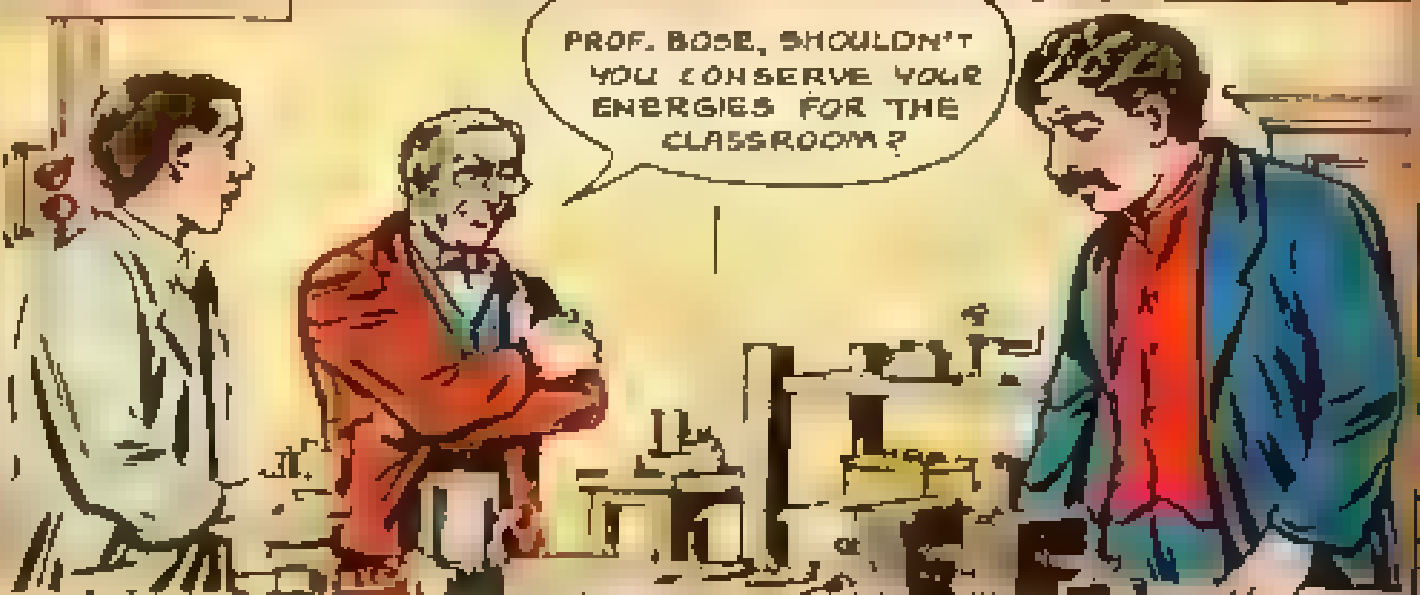
BOSE WAS GIVEN THE REVISED SCALE OF PAY WITH RETROSPECTIVE EFFECT.

IN THE NEXT FEW YEARS, BOSE SPENT MUCH OF HIS SPARE TIME IN THE COLLEGE LABORATORY WENDING HIS OWN MONEY AND USING HIS FINE ENGINEERING SKILL HE MADE MANY OF THE INSTRUMENTS HE NEEDED



INSTEAD OF APPRECIATING HIS WORK THE COLLEGE AUTHORITIES FELT HE WAS WASTING HIS TIME

PROF. BOSE, SHOULDN'T YOU CONSERVE YOUR ENERGIES FOR THE CLASSROOM?



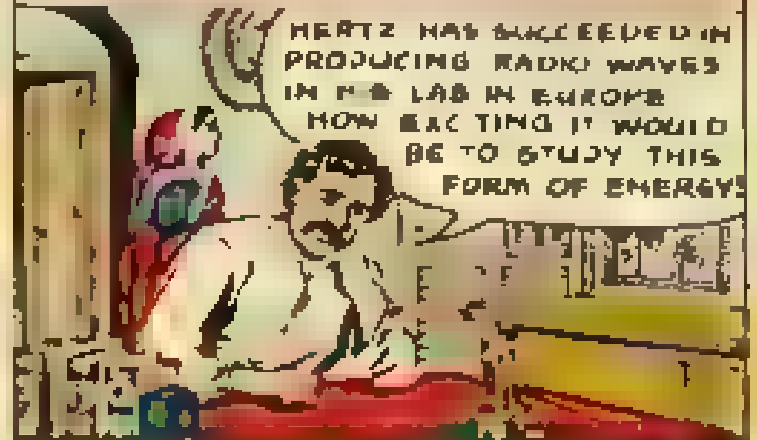
THIS ATTITUDE POWERED BOSE

IF ONLY WE
HAD AN IN-
DEPENDENT
INSTITUTE OF
SCIENCE, WHERE
ONE COULD WORK
WITH A FREE
MIND, IF ONLY.



AT HOME HOWEVER IT WAS DIFFERENT.
ABALA TOOK A KEEN INTEREST IN HIS
RESEARCH WORK AND ACTIVELY
ENCOURAGED HIM WHEN HE FELT LOW.

HERTZ HAS SUCCEEDED IN
PRODUCING RADIO WAVES
IN HIS LAB IN EUROPE
HOW EXACTING IT WOULD
BE TO STUDY THIS
FORM OF ENERGY?



THE WORLD TODAY
KNOWS SO LITTLE
ABOUT THE
PROPERTIES OF
THREE WAVES



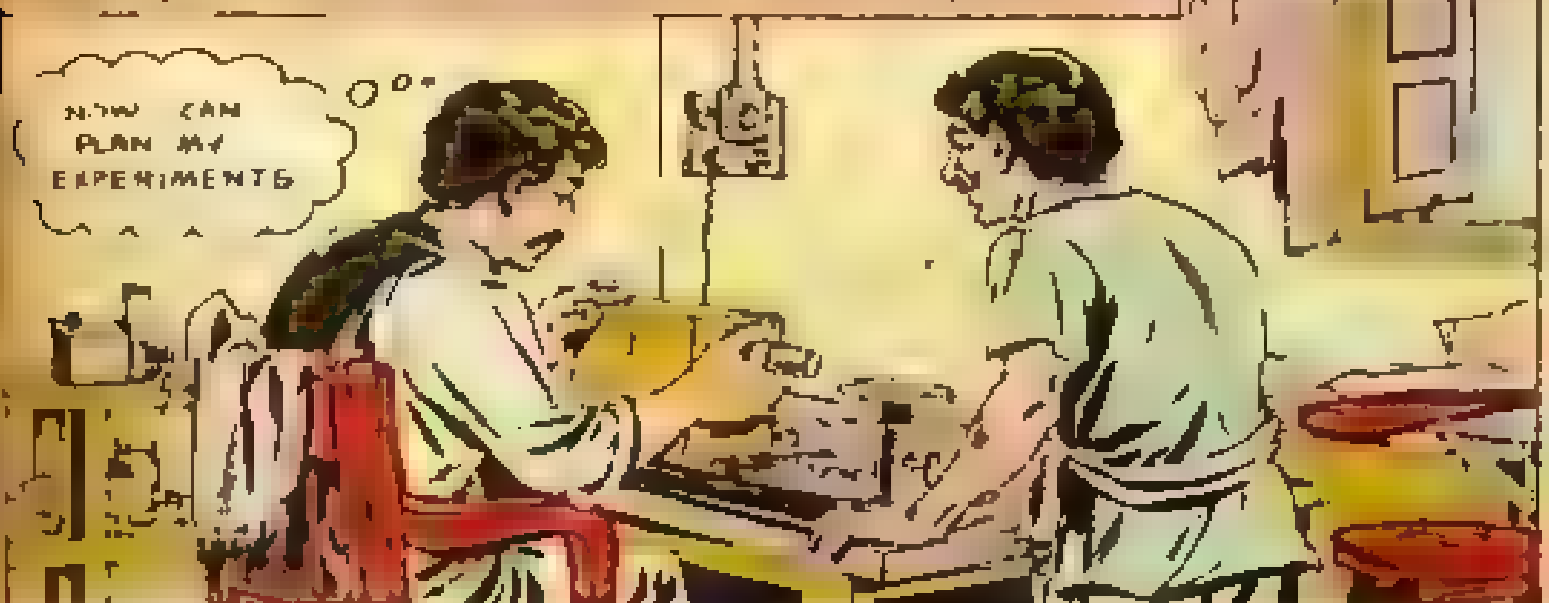
WHY DON'T YOU
MAKE AN INSTRUMENT
LIKE HERTZ'S AND
STUDY THESE WAVES
IN YOUR LAB HERE
IN INDIA?



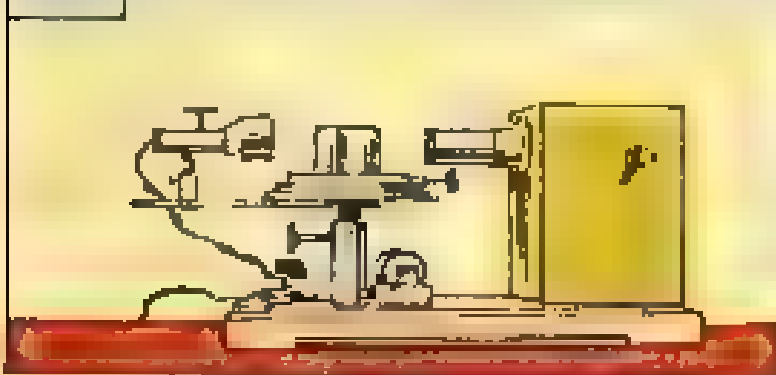
THE SUGGESTION APPEALED TO BOSE,
AND HE IMMEDIATELY STARTED WORK
ON THE PROJECT.

WITH HIS OWN ENGINEERING SKILL AND THE ASSISTANCE OF A TIN-SMITH HE HAD
TRAFFIC, HE FINALLY SUCCEEDED IN MAKING THE EQUIPMENT

NOW CAN
PLAN MY
EXPERIMENTS



BOSE'S EQUIPMENT WAS A SCIENTIFIC MARVEL. THE COMPACT APPARATUS WAS MUCH SUPERIOR TO THE ONE MADE BY HERTZ IT COULD PRODUCE RADIO WAVES OF VERY SHORT WAVELENGTHS WHICH NO OTHER APPARATUS COULD ATHERTU DO



QUANTITATIVE EXPERIMENTS ON THE PROPERTIES OF THESE WAVES WERE NOW POSSIBLE FOR THE FIRST TIME.

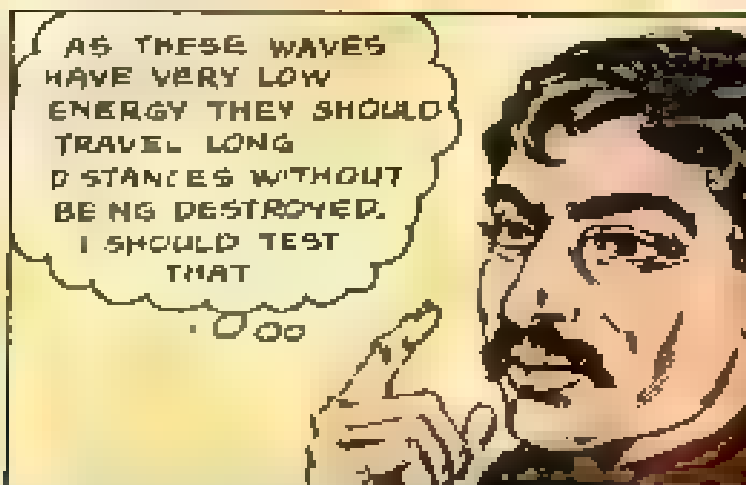
THESE ELECTROMAGNETIC WAVES BELONG TO THE SAME GROUP OF ENERGY WAVES TO WHICH LIGHT BELONGS



SO, LIKE LIGHT WAVES, IT MUST BE POSSIBLE TO POLARIZE RADIO WAVES 'OO!



AS THESE WAVES HAVE VERY LOW ENERGY THEY SHOULD TRAVEL LONG DISTANCES WITHOUT BEING DESTROYED. I SHOULD TEST THAT



AND THUS BOSE DISCOVERED THE CRYSTAL NEMATITE WHICH COULD POLARIZE RADIO WAVES.

HIS EXPERIMENTS ON THIS TOO GAVE HIM POSITIVE RESULTS

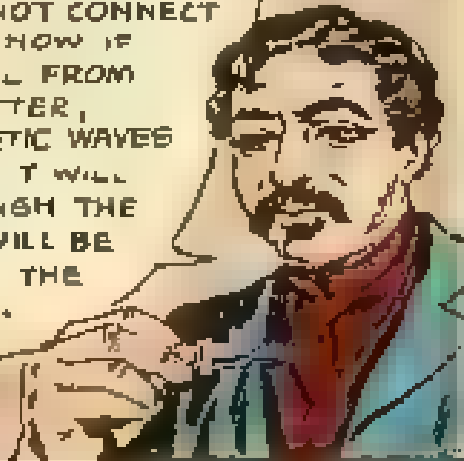
IN 1895 HE GAVE A PUBLIC DEMONSTRATION OF HIS DISCOVERIES IN CALCUTTA

GENTLEMEN, I HAVE SHOWN YOU THE TRANSMITTER PLACED IN THE OTHER ROOM, 75 FEET AWAY FROM US



ABOUT 23 METRES

THIS IS THE COHERER*
YOU CAN SEE THAT THE
COHERER AND THE TRANS-
MITTER ARE NOT CONNECT-
ED BY WIRES. NOW IF
I GIVE A SIGNAL FROM
THE TRANSMITTER,
ELECTROMAGNETIC WAVES
PRODUCED BY T WILL
TRAVEL THROUGH THE
WALLS AND WILL BE
PICKED UP BY THE
COHERER..



AND THIS
BELL WILL
RING HERE.



AS SOON AS BOSE WENT TO THE
OTHER ROOM AND GAVE THE SIGNAL —



THE AUDIENCE WAS ASTOUNDED.

IT IS POSSIBLE TO BEND
SIGNALS WITHOUT THE AID
OF WIRES! IT'S ALMOST
LIKE MAGIC..



BOSE WORKED LONG HOURS IN THE LABORATORY AND YET FOUND TIME TO HELP HIS WIFE IN THE KITCHEN.

THERE, ABALA! ALL YOUR JARS NEATLY LABELLED AND ARRANGED!

YOU JUST HAVE TO LOOK AT THE LABEL AND YOU GET WHAT YOU WANT.

BOSE STARTED WORK ON A PROJECT TO LINK HIS COLLEGE, A KILOMETRE AWAY, WITH HIS HOME BY RADIO. BUT A LETTER FROM THE ROYAL SOCIETY MADE HIM LEAVE HALFWAY.

ABALA, THE ROYAL SOCIETY IS PUBLISHING MY PAPERS

THAT'S GREAT NEWS! BUT I'M NOT SURPRISED

I WISH I COULD MAKE A TRIP TO EUROPE AND OBSERVE THE WORK GOING ON THERE IN MY FIELD.

PERHAPS YOU COULD APPLY FOR SOME LEAVE AND PLAN A TRIP

1. AS A RESULT OF THE BRITISH BOARD OF WORKS AND MINISTERS MEETING TO WORK AT THEIR LONDON SESSION

ABALA, I HAVE BEEN SANCTIONED SPECIAL LEAVE TO ATTEND THE SESSION. WE GO NEXT WEEK



2. HIS LECTURE AT LONDON EARNED HIM THE ADMIRATION AND ESTEEM OF THE PROMINENT SCIENTISTS FROM ALL OVER EUROPE WHO HAD ASSEMBLED THERE



3. LORD KELVIN WAS SO IMPRESSED THAT HE LIMPED INTO THE LONDON GALLERY TO CONGRATULATE ABALA

(CONGRATULATIONS, MRS BOSE YOUR HUSBAND IS A GENIUS HE HAS MADE A GREAT STRIDE IN THE REALM OF PHYSICS)



THEY WERE THE FIRST WOMEN TO BE ADMIRERS FULLY BY THE SCIENTISTS. EVEN HE WENT TO THE BRITISH BOARD OF WORKS AND MINISTERS MEETING WITHOUT THE ADMIRATION THE GOVERNMENT AS A SPECIAL GESTURE EXTENDED HIS LEAVE TO ALLOW HIM TO STAY IN LONDON



MANY PROMINENT INDIANS SAW A KINDRED SPIRIT IN HIM AND CAME TO HIS AID. TAGORE WAS ONE OF THEM.



BOSE SPENT ALL HIS TIME ON HIS RESEARCH ON ELECTROMAGNETIC WAVES. ONE DAY -

ON THE SAME MORNING, THE RECEIVER HAS LOST ITS SENSITIVITY NOW I WILL HAVE TO WAIT UNTIL MORNING TO CONTINUE THIS EXPERIMENT

THE NEXT DAY -

GOOD NOW THE RESPONSE IS FINE. MEANING, ITS SENSITIVITY GOES DOWN AS IF IT WERE TIRE. AFTER ENOUGH REST IT REGAINS ITS EFFICIENCY

IS IT POSSIBLE THAT LIKE LIVING BEINGS METALS ALSO HAVE FATIGUE? SOUNDS IMPOSSIBLE BUT THAT IS WHAT HAPPENS HERE BECAUSE, INDIAN PHILOSOPHY DOESN'T RULE OUT SUCH A POSSIBILITY

BOSE WAS THUS DRAWN INTO AN ALTOGETHER NEW FATHORIZATION AND HE CAME UP WITH SOME STARTLING CONCLUSIONS

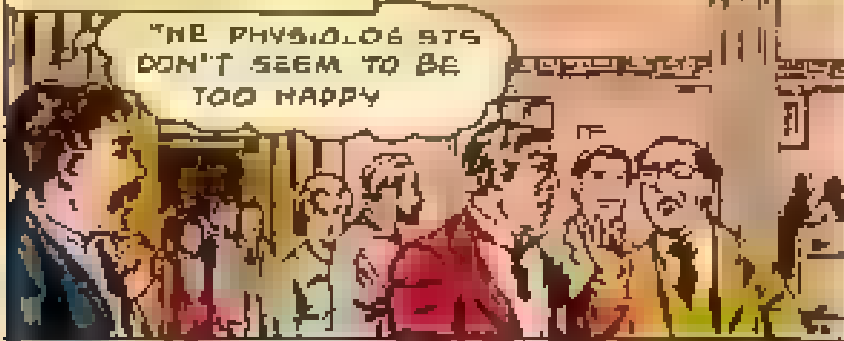
HOW STRANGE HOW COULD WE SEPARATE THE LIVING AND NON-LIVING MERELY ON THE BASIS OF RESPONSE...

IN 1900 THE GOVERNMENT SENT BOSE TO ATTEND THE INTERNATIONAL CONFERENCE OF PHYSICISTS AT PARIS. THERE HE PRESENTED HIS NEW FINDINGS ON THE RESPONSE IN THE LIVING AND NON-LIVING

...THE LINES OF DEMARCATION BETWEEN THE LIVING AND THE NON-LIVING ARE QUITE ARBITRARY

REMARKABLE! ONLY A SCIENTIST COULD HAVE COME UP WITH IT. THIS DISCOVERY IS GOING TO REVOLUTIONIZE SCIENTIFIC THINKING ITSELF

FROM PARIS BOSE WENT TO ENGLAND WHERE HE READ A SIMILAR PAPER BEFORE THE BRITISH ASSOCIATION. HERE TOO IT WAS WELL RECEIVED BUT —



"THE PHYSIOLOGISTS DON'T SEEM TO BE TOO HAPPY"

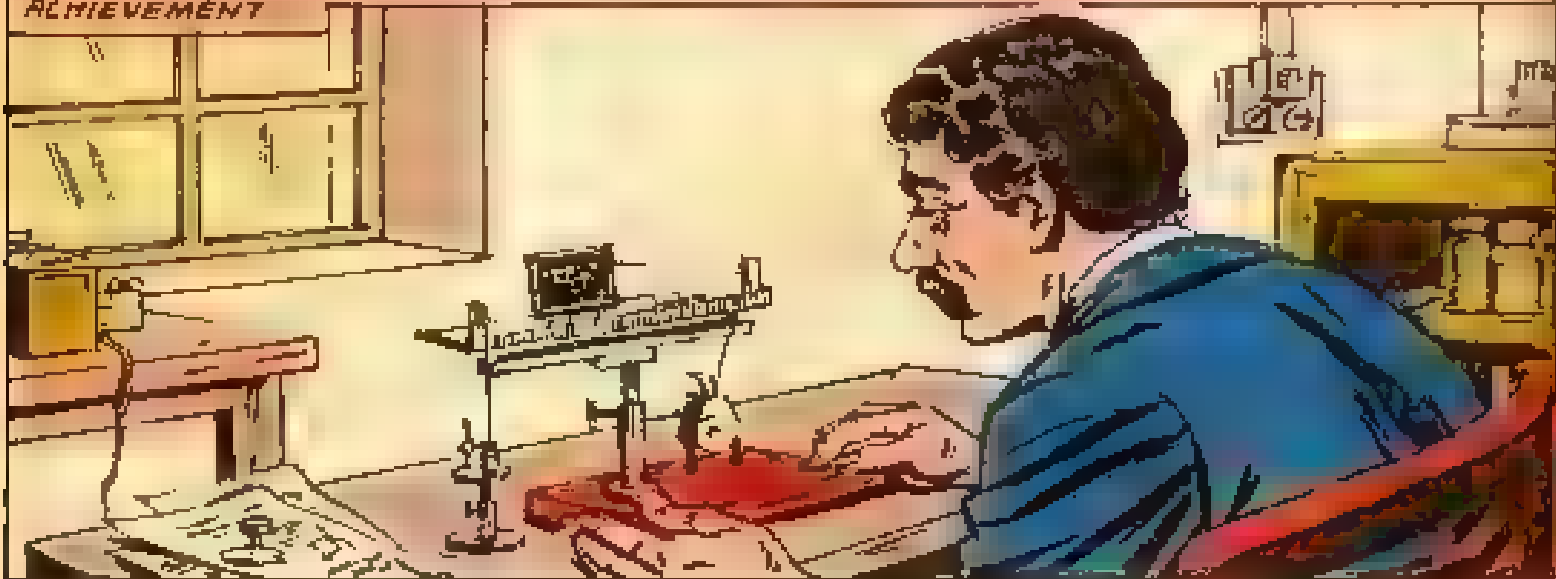
THE PHYSIOLOGISTS WERE NOT. THEY COULD NOT ACCEPT BOSE'S METHOD OF EXPERIMENTATION AS SUCH METHODS WERE NOT RECOGNISED BY THEM

AT THE INVITATION OF LORD RALEIGH HE STAYED BACK IN LONDON TO DEVISE NEW TECHNIQUES.

I MUST PERFECT AN INSTRUMENT TO RECORD MINUTE RESPONSES THAT SHOULD BE MY FIRST GOAL

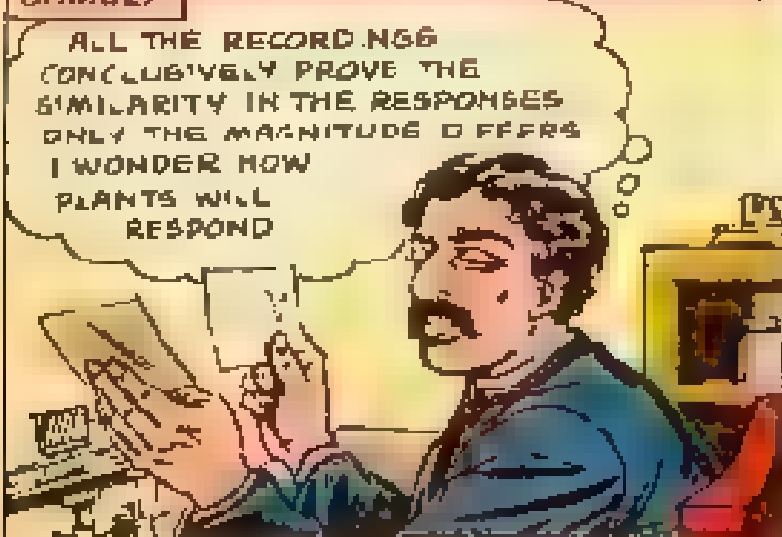


WHAT HE EVENTUALLY DESIGNED FOR THIS PURPOSE WAS THE CRESCOGRAPH WHICH COULD AMPLIFY ANY TINY SIGNAL TO MILLION TIMES. IT WAS A MAGNIFICENT ACHIEVEMENT



BOSE RECORDED THE RESPONSES OF ANIMALS AND METALS TO DIFFERENT STIMULI

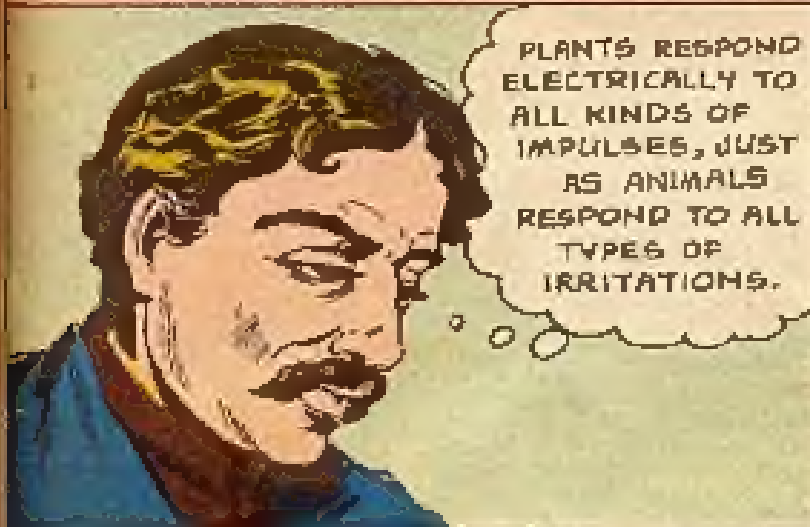
ALL THE RECORDINGS CONCLUSIVELY PROVE THE SIMILARITY IN THE RESPONSES. ONLY THE MAGNITUDE DIFFERS. I WONDER HOW PLANTS WILL RESPOND



HE RUSHED TO THE GARDEN AND COLLECTED SOME LEAVES



ON TESTING THEM HE WAS ASTOUNDED.



PLANTS RESPOND ELECTRICALLY TO ALL KINDS OF IMPULSES, JUST AS ANIMALS RESPOND TO ALL TYPES OF IRRITATIONS.

ACCEPTANCE TO HIS REVOLUTIONARY IDEAS HOWEVER WAS SLOW TO COME.

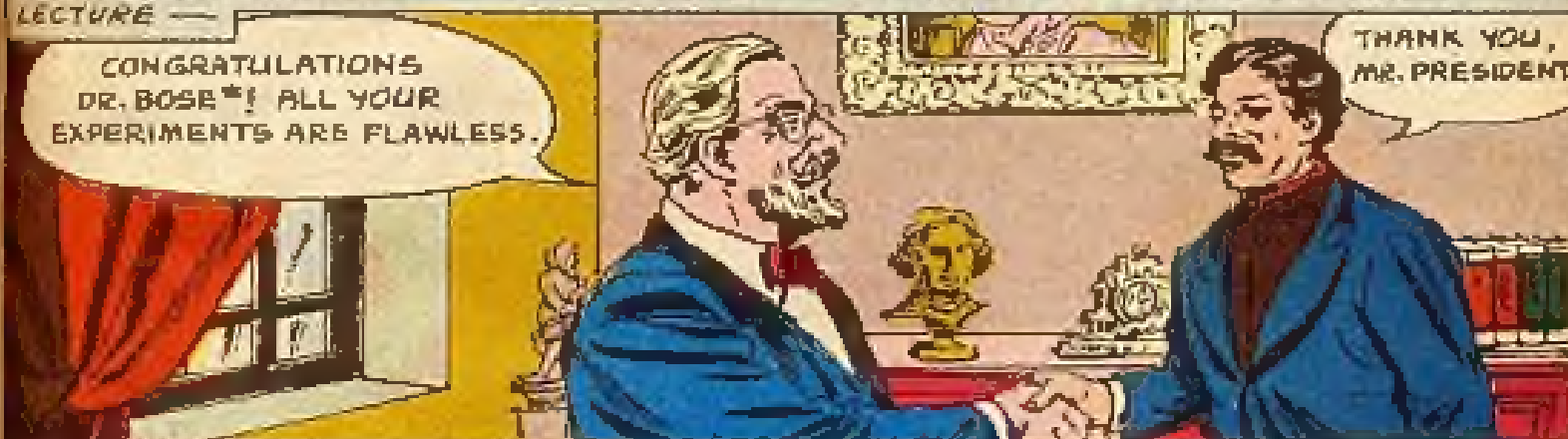
ORDINARY PLANTS RESPONDING TO ELECTRIC STIMULI LIKE ANIMAL TISSUES. IMPOSSIBLE!



BUT BOSE DIDN'T GIVE UP. HIS PAINSTAKING WORK AND METICULOUSLY PLANNED EXPERIMENTS SLOWLY WON HIM RECOGNITION.

IN 1902 HE CONDUCTED A NUMBER OF EXPERIMENTS BEFORE THE LINNEAN SOCIETY GATHERING CONSISTING OF MOST OF HIS CRITICS. WHEN BOSE FINISHED HIS LECTURE —

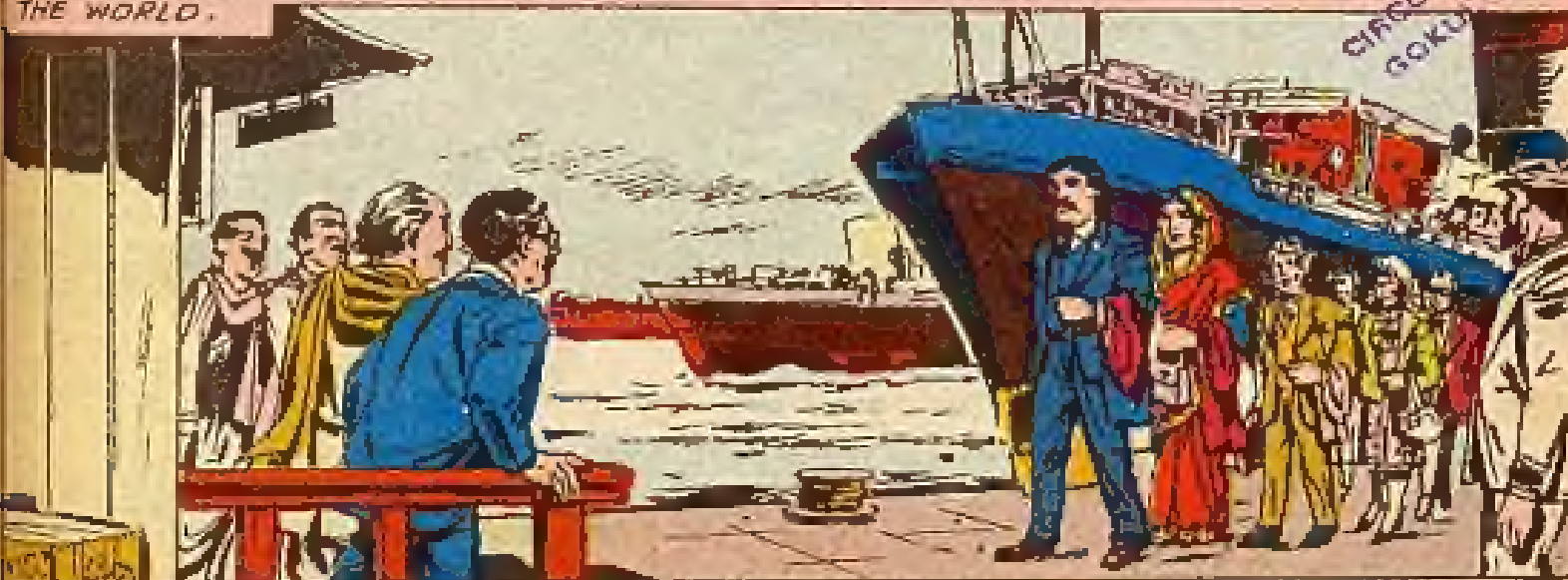
CONGRATULATIONS DR. BOSE*! ALL YOUR EXPERIMENTS ARE FLAWLESS.



THANK YOU, MR. PRESIDENT.

BOSE'S PIONEERING WORK HAD OPENED UP A NEW BRANCH IN NATURAL SCIENCE — BIOPHYSICS. STUDYING BIOLOGICAL PHENOMENA WITH THE METHODOLOGY OF PHYSICS, WITH ITS ACCURACY AND PRECISION, YIELDED A GREAT DEAL OF NEW INFORMATION ON THE MYSTERIES OF LIFE.

BOSE RETURNED TO INDIA IN TRIUMPH IN OCTOBER 1902. THE ROYAL SOCIETY HAD FINALLY PUBLISHED HIS PAPERS AND HIS DISCOVERIES HAD BEEN ACCEPTED ALL OVER THE WORLD.



* LONDON UNIVERSITY HAD AWARDED HIM A DOCTORATE IN RECOGNITION OF HIS OUTSTANDING CONTRIBUTION.

BOSE RESUMED HIS DUTY AT PRESIDENCY COLLEGE. FOR ALL HIS SUCCESS AND FAME, HE STILL HAD TO STRUGGLE WITH AN ILL-EQUIPPED LABORATORY.



ONE CAN'T EXPECT THE GOVERNMENT TO SET UP A DECENT LAB IN THE COUNTRY, ABALA.



A RESEARCH INSTITUTE, IF IT IS TO COME UP IN THE COUNTRY WILL HAVE TO BE BUILT BY OURSELVES.

THEN LET'S START SAVING EVERY PENNY WE CAN TOWARDS THIS GOAL FROM TODAY

BOSE NOW DEVOTED ALL HIS TIME TO THE STUDY OF PLANTS. HIS DEVOTION TO HIS WORK WAS SO TOTAL THAT PEOPLE BELIEVED HE COULD EVEN CONVERSE WITH PLANTS.



HUSH! PROF. BOSE IS TALKING TO THE PLANTS. HE'LL BE ANGRY IF HE'S DISTURBED.



IN THE MATTER OF A FEW YEARS HE FOUND OUT MORE ABOUT PLANTS THAN ANYONE BEFORE AND PERHAPS SINCE.

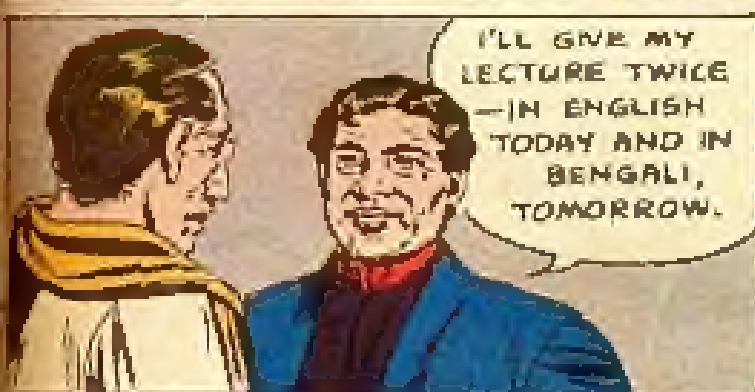


HE PUBLISHED HIS DISCOVERIES OF THIS PERIOD IN TWO OF THE MANY BOOKS HE WROTE.

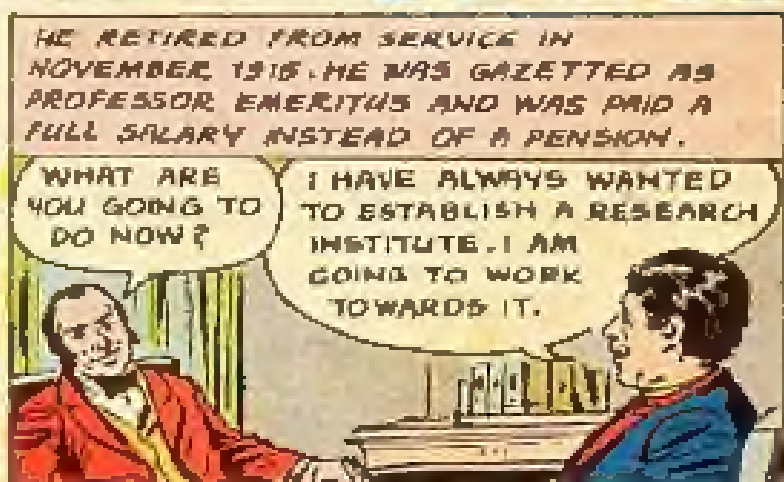


THESE BOOKS CREATED GREAT INTEREST ABROAD AND HIS METHODS AND INSTRUMENTS BEGAN TO BE USED IN UNIVERSITIES ALL OVER THE WORLD.

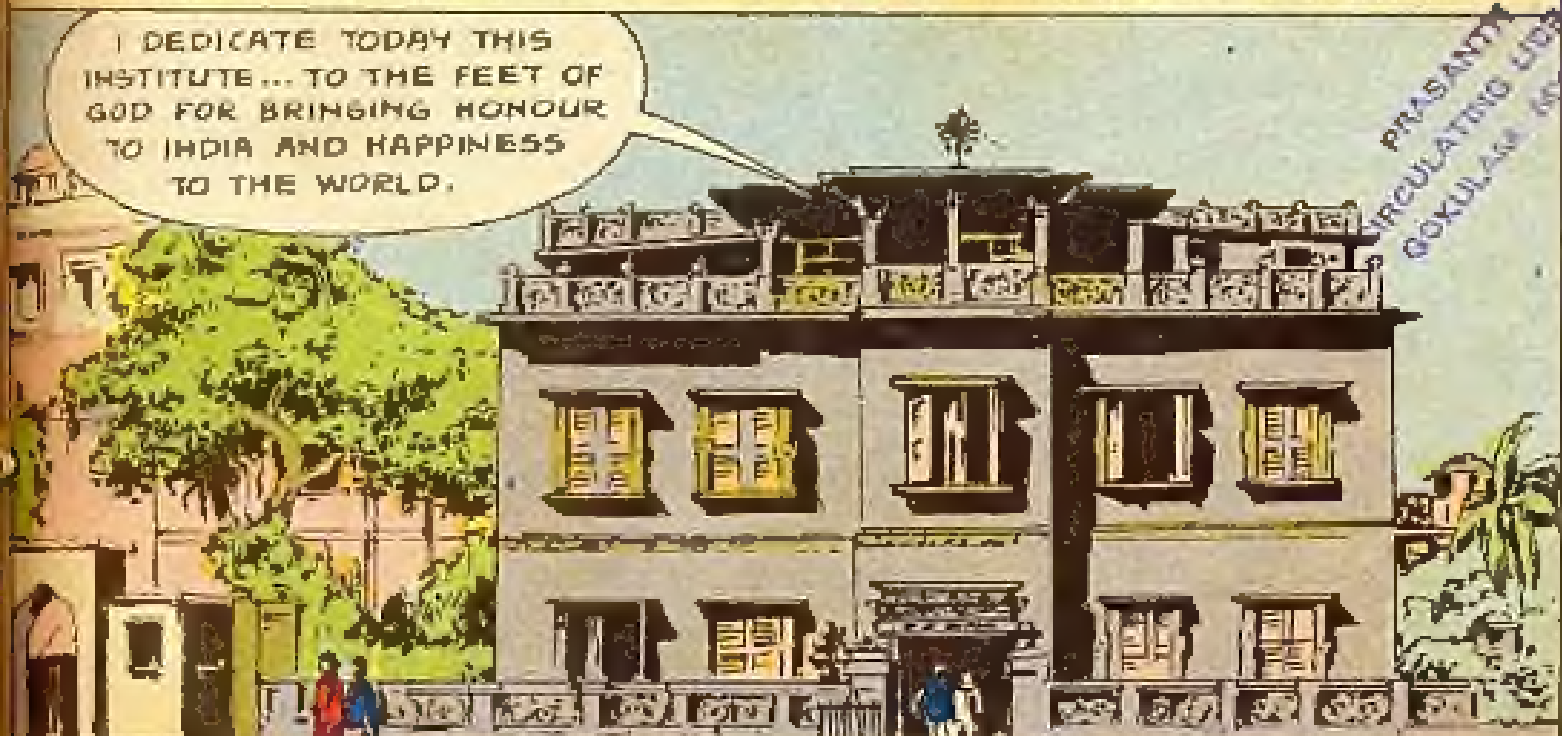
DESPITE HIS BUSY SCHEDULE HE FOUND TIME TO GO ON LECTURE TOURS ALL OVER THE COUNTRY. ONLY AT MYMENSINGH THE CROWD THAT CAME TO HEAR HIM WAS MORE THAN THE HALL COULD CONTAIN.



BOSE NEVER TRIED TO CAPITALISE ON HIS FAME OR HIS INVENTIONS.



THE INSTITUTE WAS OPENED ON 30 TH NOVEMBER, 1917 ON HIS 53 TH BIRTHDAY.





AS THE FOUNDER-DIRECTOR, BOSE WORKED AT THE BOSE RESEARCH INSTITUTE FOR THE REST OF HIS LIFE, GUIDING YOUNGSTERS IN RESEARCH.

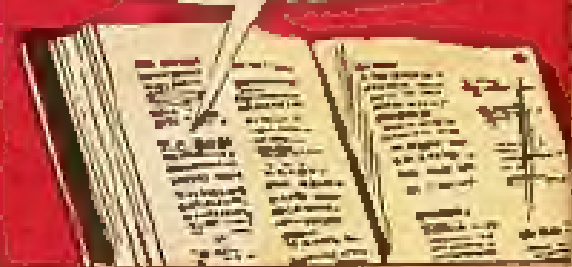
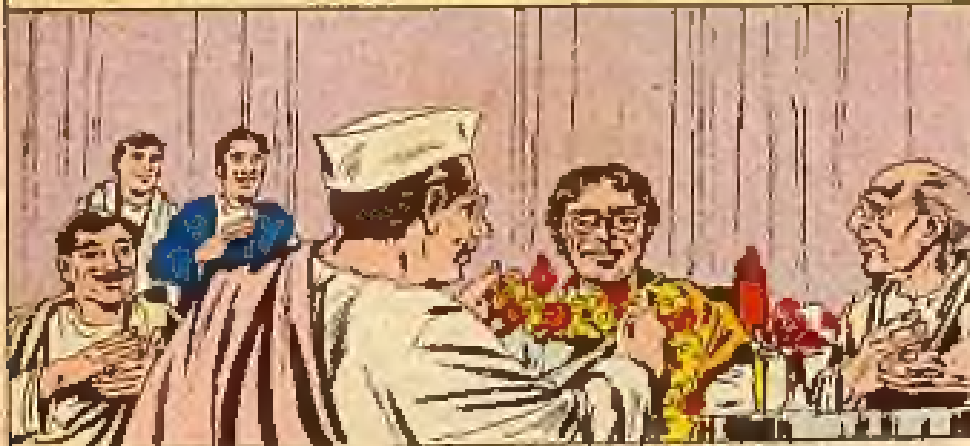
HE PERFECTED A METHOD OF TRANSPLANTING FULL-GROWN TREES, BY SEDATING THEM.



ALL SORTS OF HONOURS CAME HIS WAY NOW. HE WAS KNIGHTED IN 1917. THREE YEARS LATER, HE WAS ELECTED A FELLOW OF THE ROYAL SOCIETY. AND IN 1931 THE CITIZENS OF CALCUTTA HONoured HIM AT A CIVIC RECEPTION. SUBHAS CHANDRA BOSE, THE THEN MAYOR OF CALCUTTA, HONoured THE SCIENTIST ON BEHALF OF THE CITIZENS.

THIS OUTSTANDING SCIENTIST DIED ON NOVEMBER 23, 1937. WHAT ENCYCLOPAEDIA BRITANNICA WROTE IN 1945 ABOUT HIM IS STILL VALID.

HIS WORK WAS SO MUCH IN ADVANCE OF HIS TIME THAT ITS PRECISE EVALUATION WAS NOT POSSIBLE.



IT DOES NOT SEEM POSSIBLE EVEN TODAY.